Norman Potter

What is a designer

: things . places . messages

fourth edition

1 What *is* a designer?

Design:
v. to mark out; to plan, purpose, intend ...
n. a plan conceived in the mind, of something to be done ...
n. adaptation of means to end ...
The shorter Oxford English dictionary

Every human being is a designer. Many also earn their living by design – in every field that warrants pause, and careful consideration, between the conceiving of an action and a fashioning of the means to carry it out, and an estimation of its effects.

In fact this book is concerned mainly – not wholly – with a minority profession: of designers whose work helps to give form and order to the amenities of life, whether in the context of manufacture, or of place and occasion. The very clumsiness of this definition underlines the difficulty of using one word to denote a wide range of quite disparate experiences – both in the outcome of design decisions, and in the activity of designing. The dictionary reference above is selective; in practice the word is also applied to the *product* of 'a plan conceived in the mind', not only as a set of drawings or instructions, but as the ultimate outcome from manufacture.

This is confusing. The difficulty becomes acute if the word 'design' is used without reference to any specific context – used, for instance, as a blanket term to cover every situation in which adaptation of means to ends is preceded by an abstract of intent – though designing is thus usefully distinguished from 'making' or from spontaneous activity. Beyond this point, the word must refer to recognizable products and opportunities, or become hopelessly abstract.

The design work to be discussed is now usually studied within the art and design faculty of a polytechnic, in a school of architecture, sometimes within a university, and – not least – in some of the smaller art and design colleges that may provide vocational

courses. 'Distance-learning' institutions may provide study courses, necessarily at a generalized level and without the benefit of studios and workshops. And of course, with or without the aid of such studies and evening classes, it is perfectly possible to study design simply by doing it. It should not be necessary to say that architects are designers (even if the matter is, occasionally, in doubt). Taking that old stand-by the 'broad view', it is convenient to group the work into three simple categories, though the distinctions are in no way absolute, nor are they always so described: product design (things), environmental design (places) and communication design (messages). Such categories blur some further necessary distinctions (as between, for instance, the design of industrial equipment and that of retail products in a domestic market) but can form a useful departure.

In the field of product design, the professional extremes might be said to range from studio pottery and textile design at one end of the spectrum to engineering design and computer programming at the other. This is a very broad spectrum and clearly there are serious differences at the extremes. In the communication field, a similar spectrum might range from, say, freehand book illustration, to the very exact disciplines of cartography or the design of instrumentation for aircraft.

Obviously, the more aesthetic and sensory latitude available within a particular range of design opportunities, the closer they resemble those offered by the practice of 'fine-art'. The less latitude, the closer design becomes to the sciences, and to fields in which the scope of aesthetic 'choice' is truly marginal. The design of a traffic light system has an aesthetic component, but it would need a very special definition of aesthetics to embrace the many determining factors that must finally settle the design outcome.

The situation for architects is usually held to be more straightforward; historically, their position has developed a fairly clear set of responsibilities. However, the complex changes in building types, and in industrialized building possibilities, have combined with other factors thoroughly to upset this stable picture. Indeed, the architect's work has been so undermined by that of specialists in surrounding territory (engineers, planners, sociologists, interior designers, etc.) that the profession is no longer so easy to identify. It

is still reasonable to see an architect as a designer with a specialized technical and functional competence, and again a spectrum is discernible, ranging from very open and ephemeral design situations, to those as critical as the design of an operating theatre.

It is necessary to start somewhere, and this book takes a middle-zone standpoint. In most art schools this will include furniture, interior design, exhibition design, packaging, some wide areas of graphic and industrial (product) design, and some of the fringe territory leading into architecture. Students must make the necessary allowances to accommodate their own subject of study. This is chiefly necessary in part 2 ('Is a designer an artist?') and in some of the notes on procedure (parts 11–16) – or the studio potter will certainly feel that everything in this book is unduly complicated, whereas an architect might feel that there is undue simplification. All designers, however specialized should know roughly what their colleagues do – and why; not only to fertilize their own thinking, but also to make group practice effective, and for other reasons that will appear.

There are many roles for designers even within a given sector of professional work. A functional classification might be: impresarios, culture diffusers, culture generators, assistants, and parasites. Impresarios: those who get work, organize others to do it, and present the outcome. Culture diffusers: those who do competent work effectively over a broad field, usually from a stable background of dispersed interests. Culture generators: obsessive characters who work in back rooms and produce ideas, often more useful to other designers than the public. Assistants: often beginners, but also a large group concerned with administration or draughtsmanship. Parasites: those who skim off the surface of other people's work and make a good living by it. The first four groups are interdependent, necessary to each other. It should be added that any designer might shift from one role to another in the course of his working life, or even within the development of a single commission, though temperament and ability encourage a more permanent separation of functions in a large design office. Thus no value-judgement is implied here, except upon parasites who are only too numerous.

In small offices – or of course for independent freelance workers – there will be little stratification; 'the office' may tend to move

in one direction or another, but the work within it will be less predictable for any one member – excluding, perhaps, secretarial or administrative assistants and often temporary draughtsmen. A 'consultant' is often a lone wolf who deals in matters of high expertise or (paradoxically) of very broad generality. Designers will be found in every quarter, sometimes working independently, sometimes for government or local authority offices, or attached to large manufacturers, to retail agencies, to public corporations, and elsewhere in places too numerous to mention. Artisan designers will have their own workshop and perhaps their own retail outlet. There are a few design offices that will design anything from a fountain pen to an airport, and will therefore employ specialists from every field (including architects) – a rational development and a welcome one, but implying some genius for large scale organization which, in turn, may tend to level out the standard of work produced. (As numbers increase, it becomes a problem to keep work flowing through at a productive pace, yet have enough – not too much – to allow everyone a fair living.) Students usually need a few years' office practice before setting up by themselves; often this happens in small groups of three to six designers who will share office and administrative expenses.

Most designers are educated in a formal way by three-to-seven years in a design school (or school of architecture) leading to appropriate qualifications. Some have had unorthodox beginnings – by dropping in the deep end and learning to swim – but self-training may need sympathetic patrons, is apt to be patchy according to the opportunities that occur, and needs a special pertinacity. Apprenticeship rarely means more than training as a draughtsman. A few factories or retail firms may encourage employees who show design aptitude. Evening classes and correspondence courses are mostly directed at cultural appreciation or do-it-yourself horizons, but intending full-time students can build up a portfolio of work by this means.

A note of warning: the word 'design' appears freely as noun and verb, and where words like 'formal', 'realization', 'consciousness' are used without qualification, readers should examine the context and think for themselves. I have used the word 'student' suggestively; trying it for size.

There is a perfectly good sense in which a creative worker remains, perpetually a humble student of his subject. This is not to be confused with the timidity of the 'permanent student' whose name haunts the lists of application for grants, research funds, and finally, minor teaching appointments. These must again be distinguished from the serious student of scholarly bent who 'reads' the subject and may make a distinctive contribution to theory or criticism. By the word 'student', therefore, I mean those who still question what they are doing, and ask why.

There is no word by the use of which sex-discrimination can be avoided. Readers must accept that when 'him' or 'man' is used, these words embrace both sexes (unless the text does draw a distinction). Women should not be deterred from course-work that includes the use of machinery and unfamiliar work with hand-tools. Invariably such skills are gained rapidly and practised with enthusiasm.

This, then, is the apparent situation of the designer and where this book begins. Returning to the statement that every human is a designer, and using it as a springboard: we do well to remember that designers are ordinary human beings, as prone as others (given half a chance) to every human weakness, including an exaggerated idea of their own consequence. Consider the following questions: Should a designer design for a factory in which he could never imagine working as an operative? Is design social-realist art? Is it handy to be in a state of moral grace when designing a knife and fork? Does design work justify its claims to social usefulness, or is it a privileged form of self-expression? Is a profession a genteel self-protection society with some necessary illusions? Should a designer be a conformist or an agent of change?

Those who feel that such questions are diversionary and a waste of time, should perhaps put this book down; others read on, but not for easy answers.

2 Is a designer an artist?

Before discussing this question, which involves describing a designer's work in some detail, it is necessary to look at the context in which it is usually asked. First, each country or culture has its own history, and this must affect how design functions now in any particular culture. The second difficulty is more widespread. It is the well-known but uneasy juxtaposition of 'fine-art' studies with 'design' subjects within a common faculty, excluding (normally) architecture. It would be out of place here to examine the history of this problematic and to some extent (now) arbitrary grouping of studies. It is enough to point out that the situation could be more realistically appraised if painting and sculpture were studied alongside music, dance, poetry, film and other activities that interpret, primarily, the psychological and sensuous and spiritual understanding of man. It would then be easier to distinguish those activities which must first satisfy his physical and accessory needs under conditions of complex social constraint (as in building design), or which may have a much humbler role in serving and pleasing man. It is true that, in the last analysis, every human artefact – whether painting, poem, chair, or rubbish bin – evokes and invokes the inescapable totality of a culture, and the hidden assumptions which condition cultural priorities. (In a basic sense, and given the conditions for warmth, food and shelter, the rest is a choice and speaks to us of priorities which need constant revaluation.) For the purpose of the remarks which follow, it is certainly necessary to say that if the words 'fine-art' and 'design' simply refer to a duality as experienced in art schools, it is difficult to set up satisfactory distinctions on that basis alone.

For the discussion that follows, the situation is seen from the standpoint of a designer.

Here is a sober but accurate description of professionalism by Misha Black: '... the offering to the public of a specialized skill, depending largely upon judgement, in which both the experience and established knowledge are of equal weight, while the person

possessing the skill is bound both by an ethical code and may be accountable at law for a proper degree of skill in exercising this judgement.'

Not, obviously, a full description, and perhaps a somewhat negative one, but making the fact plain that a designer works through and for other people, and is concerned primarily with their problems rather than his own. In this respect he might be seen as a medical man, with the responsibility a doctor has for accurate diagnosis (problem analysis) and for a relevant prescription (design proposals), though the comparison should not be taken too far. It must be clearly realized that designers work and communicate indirectly, and their creative work finally takes the form of instructions to contractors, manufacturers and other executants. The exception is the designer-craftsman or artisan, whose situation is discussed in part 6. The instructions may include written specifications, reports, and other documents, detailed working drawings, presentation drawings for clients, scale models and sometimes prototypes in full size. Since this is as far as a designer goes in direct production (strictly what he makes are visual analogues), it is necessary that the instructions are very clear, complete, and in other ways acceptable to those who must work from them. Much is said about this requirement in parts 11 to 16 of this book.

The designer usually has the further responsibility of supervising the work, but there is no obvious equivalent for the feedback through eye-and-hand so familiar to the painter or sculptor, whereby the original idea is constantly developed, enriched, or diverted by the actual experience of the materials and the making-process. The artisan is an exception. For most designers the point of no return (commitment to final drawings) is indeed final, unless everything is upset by site contingencies. So-called 'feedback' does of course operate at the design stage, mainly through people, circumstance, and the continuous absorption of new information into the design brief, which will alter its definition. The outcome will still change radically from first ideas thrown up by superficial acquaintance with the design problem, but the changes will not always be of the designer's own choosing: their nature may be objectively determined by factors quite outside his control. Such factors might be something to do with costs, the availability of

materials or techniques, a change in the client's requirements, or simply the discovery of factors that were hidden from sight in the early stages of the job.

Hence, in summary, the designer provides instructions (having exhaustively established and agreed the best course of action), and the work necessarily involves many different people whose interests (often in conflict) he must seek to reconcile. With some such people he may have (legally) contractual relationships.

Thus many specific responsibilities may arise – to clients, contractors, to the public who use the end-product, to numerous specialists or colleagues who may be involved if the undertaking is a large one (which implies team-work and frequently shared decisions). If it is a building, it mustn't fall down; if it is a chair, it mustn't be thirty inches high, have an innate tendency to collapse under load, it mustn't employ joints that can't be made except by special machinery (unless this can be found economical) and it mustn't cost so much as to be unmarketable. The designer cannot exercise personal insights until every apparently conflicting factor in his brief has been reconciled to best advantage: until, in short, he knows exactly what he is up against and which constraints can be made to play in his favour.

For such reasons, the designer is highly 'problem' conscious; a large part of his work may consist in problem analysis, though rarely of the complex order familiar in the sciences. To an ability for sorting, ordering, and relating information he must bring qualities of judgement and discrimination as much as a lively imagination. There is a diffuse sense in which the most seemingly 'objective' procedures in problem analysis are in practice discretionary, embedded as they are in the whole matrix of professional judgement in which relevant decisions are conceived. In some fields (such as textile design) there is far greater latitude than in others. In most design work the ultimate decisions affect, in a vital degree, appearance; but the look of the job, however lovingly considered, will emerge from, and in some sense express, the functional and circumstantial background. There are of course cases in which a communication requirement will be superimposed overridingly upon other factors, like structural logic; that would simply be a special (perhaps sophisticated) view of function.

Drawings can never be an end for a designer (excepting an illustrator); they are a means to the end of manufacture, and their expressive content is strictly limited to the purposes of relevant communication. This obvious distinction from fine-art drawing can easily be overlooked in a design school where the design projects are theoretical, and drawings become the only outcome, acquiring the false dignity of an end-product in the process. This does not imply that drawings can be loveless, slovenly, or inadequate in any way, but that their nature is strictly purposeful. It may indeed be necessary to the designer to make loving, scrupulous and over-adequate drawings for his own self-satisfaction and to preserve his own standards. Only in this sense are design drawings 'self-expression'.

At every stage of design there will be discussion, questions and argument; the final design will have to be demonstrated and if necessary defended to the client, who will not understand what the final result will look like, but will naturally tend to assume that he knows more about his own problems than does the designer – despite having called him in to solve them. A design proposal intermingles with the world of considerations familiar to the client; communication media must be carefully chosen – verbal reports and other documents may accompany drawings and models. Designers use words constantly and in direct relation to their work; in forming and discussing ideas, assessing situations, annotating drawings, writing specifications and letters, and in report writing. This aspect of design work is frequently underestimated: an ability to use words clearly, pointedly, and persuasively is at all times relevant to design work.

It is now possible to ask, what kind of person might be happy and personally fulfilled in taking up design? It will be seen that a designer must be capable of more detachment than may be necessary to a fine-artist. He must be able to weigh up a problem, or an opportunity, in a dispassionate way, on its terms (as well as his own), and to select, arrange, and dispose his decisions accordingly. He must be able to thrive on constraint and to turn every opportunity to good account. He must like and understand people and be able to treat with them; he must be able to accept fairly complex situations in which he may well be working as a member of a team. He must be reasonably articulate. He must be practical and prepared for extensive responsibilities to other people. Finally he must be prepared to spend at least half his time working with graphic media, since most design work appears in drawings of one sort or another when decisions have been finalized.

These remarks may suggest an uncomfortably glum idea of human perfectibility. In practice, of course a designer's life is as muddled, informal, and accident-prone, as most people's lives manage to be; not only behind the scenes, but sometimes in front of them. Every profession has roughly defined public responsibilities, which are met as closely as possible by accepted codes of practice. Again, the fact that design work is ten per cent inspiration and ninety per cent fairly hard work – not an unusual prospect – does need some well-organized procedures to keep the brief clearly in view, and the available energies best occupied.

Some of these procedures will be familiar to painters and sculptors, and certainly to film-makers; but for them the work will have a more inward character in its origins. Thus a painter's first responsibility is to the truth of his own vision, even though that vision may (or maybe always does) change as his work proceeds. He may be involved with contractual responsibilities, but not to the same extent as is a designer, whose decisions will be crucially affected by them. The designer works with and for other people: ultimately this may be true of the fine-artist, but in the actual working procedure a designer's formative decisions have a different order of freedom. The fine-artist is less dependent on discussion, agreement, letters, visits: the apparatus of communication that brings definition to a design problem, and relevance to its solution. A fine-artist usually works directly with his materials, or with a very close visual analogue to the final work. As we have seen, the designer has a long way to go before firm proposals can emerge – and even then a model may be the nearest thing to a tangible embodiment of his ideas.

In the case of film, television, and theatre, which might be described as a realm of public art, quite complex design procedures are involved. In the main, however, the real connection between fine-artists and designers springs from the benefit of a shared visual sensibility; not from a relevant or direct transference of skills, language, or formative insight, from one field to the other. Students are warned that this is an opinion: recalling the breadth

of the design 'spectrum', they will see that this is a difficult matter to unravel. So many factors impinge on the visual appearance of a design outcome that a designer's hand would seem to be guided by a wholly different 'requiredness' (a term borrowed from Gestalt psychology) from that which informs a painting or a work of sculpture. Yet there are component experiences with something in common. Equally valid transferences may occur from the 'feel' of related work in other fields (for example, philosophy, music, or mathematics) and should be encouraged to do so. Similarly, a creative sensibility may derive from unlikely sources that cannot be looked for in any one field alone.

It is only necessary to hammer home the obvious because fine-art and design (excepting architecture) are often taught as closely interrelated subjects, and students are asked to choose between them. The isolation of architecture, which has always been the home base of design theory, is hard to explain and justify. Perhaps the theory is affected by it. The term 'fine-art' is unpleasantly genteel, but will be met with in the careers prospectuses and in the art schools, normally to comprise painting, sculpture, printmaking, and photography, and to distinguish these studies from 'applied art', in the various fields of design discussed here. The view that there is a parallel situation in the sciences, as between pure science and applied technology, is a questionable one: equally untrustworthy is the supposition that painting, sculpture, industrial design, architecture, derive in some sense from the common fountain-head of 'art'. To suggest this seriously requires a view of art (and a set of definitions) quite outside the scope of the present discussion: it is partly a semantic problem, pointing to the inadequacy of ordinary descriptive language. Without distorting common usage, it might be said that designers are content to bring a certain artistry to their work, and to recognize that there is much in common between the few masters in any field – fine-art, design, science, medicine, philosophy – more, perhaps, than unites the very disparate standards that coexist in any one profession.

3 Design education: principles

'Well building hath three conditions: commoditie, firmnes, and delight'
Vitruvius / Sir Henry Wotton

'Love, work and knowledge are the wellsprings of our life. They should also govern it'
Wilhelm Reich

A design capability proceeds from a fusion of skills, knowledge, understanding, and imagination; consolidated by experience. These are heavy words, and they refer to the foundations. We accept a certain minimal competence as the basis of professional self-respect, and as some guarantee of a designer's usefulness to other people. Within limits such a competence is definable, and will begin to form outlines within a formally structured teaching/learning situation. It is too much to say outright that design ability can be 'taught'. As with any other creative activity, it is a way of doing things that can only be grown into, perhaps – but not necessarily – in the context of a formal design education.

This view is readily conceded for something as immaterial as 'imagination', but it is commonly held that skills and knowledge must not only be taught, but rigorously examined: if only to protect an unsuspecting society against social or technical malpractice. Defensible as this may be, it is not an assumption that should go unquestioned, nor deflect attention from the weaknesses of received professional standards. The damage caused by knowledge used without understanding is merely difficult to measure: it is not less real for that. A skill may be irrelevant to the nature of a problem, or – in dealing with people – may be grossly uninstructed in a necessary tact and discernment. Knowledge may be thinly experienced as a rag-bag of conventional responses helped along by access to someone else's published working details. Plainly, skill and knowledge cannot be weighed out by the pound, and separated

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5 Problems with method

The case for analytical technique – of the simplest order – rests on the premise that you should find out what you are doing, or what you should be doing, before considering how to do it; and that this degree of foresight is normal to the role and situation of a designer. Such a claim is not unreasonable. In medical terms, for instance, a prescription will be a very hit-and-miss affair unless there has been a diagnosis; and in converting a building, a drawn plan will be rather vague unless it has been converted from an accurate survey. In either case there are known procedures, and techniques, that will help to avoid wasted time and effort. So much is very nearly self-evident. Methodology goes further, by suggesting that preferred models are available for the definition of goals and the allocation of effort, and that if they are correctly employed, the designer's work can be guided towards an optimum solution that might otherwise have eluded him, except through the mediation of happy accident.

This is a somewhat crass simplification of the methodological position, and indeed to discuss it at all is to invite simplification; partly to keep clear of the dead language that the subject seems to attract, and partly to sidestep the quicksands of theory and debate that surround problem-solving and methodology, keeping most designers thoughtfully at a distance. This is a partly abandoned territory, and strewn with old workings – though there is life in some of them yet. Apart from the remaining devotees, who work out of sight and occasionally surface with new formulations, there are always small bands of students, picking over the discarded hopes and new offerings. The idea that the myth of creativity can be domesticated, and perhaps told how to behave – in terms at once 'scientific' and 'verifiable' – seems always to fascinate those who feel somehow denied by the myth, or outside its provenance. Jung speaks of the alchemists in this context, and the matter is discussed exhaustively (for ordinary mortals) in Arthur Koestler's *The act of creation*, a work that could usefully head the more specialized book references in the field, but rarely does. After all, Koestler wrote that fine novel *Darkness at noon*, which helps to argue for his credibility as a guide.

However, if there are real dangers in taking methodology and problem-solving too seriously, the supposed freedoms available from randomly 'intuitive' approaches are notoriously treacherous when the work is technically and functionally complex or demanding. Unless properly guided by diagnostic technique the outcome will tend to lack both objectivity and depth of thought, and in failing to break through invisible cordons of mental sets and prior assumptions, can become little more than a thinly rationalized ego-projection. It can also be said for methodology that in an often crooked way, its heart is in the right place. Even if a mouse-like issue is the result of seemingly elephantine labours, and even if in the process, a simple opportunity is mistaken for a 'problem', at least the effort is properly outward-looking; an effort of service. The other way of looking at it is to go back to part 1 and simply say that procedures appropriate to designing textiles will hardly do for the design of an operating theatre. Fortunately the breadth of the design spectrum is very accommodating, not only to a variety of opportunities, but to many different kinds of person. This part will inspect a few small-scale design situations to see how they look, and how they measure up; only thus will the relevant design attitudes fall into place, and seem less abstract in discussion.

Let us begin with chair design – although small in scale, one of the most difficult of design assignments. I remember discussing this with a Danish architect. He said that after ten years practice he felt he should be ready to try designing a chair. It was a failure. Now, five years later, he felt he was further along his road and perhaps it was time to have another go. Of course, if you are making something to please yourself, you can freely set your own terms of reference (as perhaps this designer was doing). This will not make things easier than working to a commission; merely different. You can decide, for instance, if it takes you that way, to make a chair the function of which is to question the notion of comfort, and which is therefore designedly uncomfortable to the point of actually collapsing when sat in. (A 'sign for sitting' with question mark added.) This may not be as daft as it sounds. Designers get accustomed to the support of many constraints (limiting conditions) in the way they normally work. Remove these and it is like putting an engine out of gear suddenly, it returns to idling speed, or feels purposeless when

accelerated. One way to get the measure of a job, and to get close to it, is to project its life to absurdity (in all directions: scale, function, material, etc.) and then to pull back to some sense of boundary in what you propose to do. This technique is useful in many design situations. It was illustrated for me by a marvellous musician and a great teacher (Niso Ticciati) from whom I once had the privilege of some cello lessons. He said I should always try to form a mental picture of the whole arc of traverse of which the body, arm, and bow movement, were capable. When the bow then engaged a string briefly, for a short distance, to form a musical note – and given enough practice – the sound would come to be full and free and true. If on the other hand I approached with a picture or 'Gestalt' of just the right size, and length of contact between bow and string, and therefore unconsciously aimed for that, the sound would be tight, thin, and restricted. He put it much better. The principle is worth dwelling upon in the imagination; it has many applications.

Suppose alternatively that a designer is commissioned to design (say) a polypropylene chair for factory production. The designer (you) will be involved in an intricate investigation of the possible – in terms of marketing, costs, production techniques, user requirements – that will compel you to conduct research in a fairly methodical way. You will be acting as an agent in a social transaction involving other people's lives and jobs and interests. It will certainly help to have guidelines for your own allocation of time and energy. The form of the chair – assuming 'normal' standards of comfort – will be to some extent preconditioned by what you find out about the human body, and where and how the chair might be used. Materials and form will be impinged upon by structural and other performance considerations, some of which may not be revealed except after the prolonged testing of a prototype, and also by the costs of tooling up for the job. The chair may be part of a 'set'; some grouping of furniture intended (now or in the future) to go together, in which case you will have to devise a formal vocabulary that will fit all cases (if loosely). The job would not be untypical of product design for a retail market. Such work involves a high degree of generality – the highest common denominators of everybody's needs, as interpreted by the buyers' estimate of market demand. (The 'buyer' is the person in the retail trade who places the orders.)

A simple problem analysis would help you with this job, and would net for you, for instance, the required life of the chair as a genuine condition to first question and subsequently work with. However, the scale and nature of the work would hardly demand more analysis than would come naturally as a refinement of common sense. Your real difficulty would be in satisfying the required conditions, having established what they are, and then designing what you felt to be a good chair out of those conditions. It could turn out that just one condition was paramount. To bring this factor into the light, you might well employ some of the techniques discussed further on in this book. More likely, however, 'good' for you would have to be defined as an educated designer's appreciation of chair-form nicely realized out of all the limiting conditions, one of which would be its acceptability to a less design-educated public. Tooling costs might be so heavy that you would have to be sure about this. On the other hand, you would not be asked to exercise unsupported judgement on issues outside your competence; if anything, your competence may be underestimated if you fail to ask searching and intelligent questions right at the outset. Here is a fairly tight situation for a designer; his margins of freedom are tightly drawn. All the more reason to find out how many of the apparent restrictions are real, inevitable; and how many merely reflect the habits and prejudices of your employer.

This could become acutely relevant in any design job outside the special conditions that attend product design. Building design, or say the interior design of some public space might offer you far more latitude for responsible decision. Suppose your client has asked for chairs but your analysis of the situation suggests that chairs are quite unnecessary – the needs of this area have been wrongly seen. Here it will be the seating *situation* that you examine. It is always a designer's job to hold in mind two counter-propositions: in this case, the particular notion of 'chair', as against the general notion of 'sitting' – only by departing from the familiar and particular case, can the designer freshly appraise its context and meaning; returning, perhaps, with a modified view of 'chair', or perhaps something quite different. New relationships may have emerged which alter the terms of the argument.

Drawing again upon personal experience, I was once asked to

refurnish such a public area in a much used part of a college building. The area was noisy and unattractive and the existing furniture was badly knocked about. It soon became clear that if people were sitting down at all it was almost certainly in the wrong place and in the worst conditions for their comfort. By observation and questioning and taking opinions it began to emerge that this furnishing difficulty was merely symptomatic of problems that were located elsewhere. It was necessary not only to trace the circulation habits and patterns through this part of the building, but to ask more basic questions. In the end – and to cut a long story short – the whole area was replanned to include new student common rooms, reception rooms for guests, a public information area, a coffee-bar, and various other provisions. This in turn required the whole college to be reappraised in the light of long-term proposals for improving staff-student relationships so far as they were affected by physical environment. This required considerable alterations to offices, entrances, and other facilities. The proposals, and all the reasons supporting them, were sent out in report form to the various interests involved, and as may be imagined, much discussion took place before the scale of the problems, and their unfamiliarity, became generally recognized. In this case a problem analysis has begun with a small and apparently self-contained problem, but has finally so changed its terms of reference that 'chairs' have long since disappeared from detailed consideration (though at some point seating design will resurface as a practical design opportunity). Not only has the job become larger, but different in kind; questions of human needs and human behaviour have taken over from structural or material or aesthetic preoccupations (to return, of course, in new permutations).

Before leaving this example it is worth adding that if the client or the community as a whole had rejected the proposals, or been unable to afford them, it would still have been right to place any temporary action within a future perspective, and within a broad examination of the present. No use (on this argument) just treating a symptom. Yet there are limits to the 'broad view' – even cost limits – and there are also dangers attached to it. As with leaders or even dictators – one in ten may be benign, compassionate, and constructive, whereas the rest may be hell. The designer with the

Napoleonic vision may actually be rather a bad designer, however correct his analysis. Here the attractions of a piecemeal solution become evident, and recall those of medicine as against surgery; as is said of the surgeons, they love their work too well. And surgery can go wrong.

There are, of course, alternatives. The designer might recommend a series of happenings or improvisations that would be in constant change, thus passing the buck to one form of participatory decision-making. He would not be designing any 'thing' as such, but recommending and arguing for the course of action that seemed most appropriate, and that would continue to pose the problem rather than answer it. Or he might suggest an interim solution; a set of more controlled experiments to see what can be done with the spaces, thus gradually accumulating evidence for a more far-reaching and a more structured solution at some time in the future. By this means the constants in the situation would become gradually manifest constants, mostly, of behaviour and expectation – and the variables could be left to look after themselves. This is a bit like leaving a much-used swing door without a finger plate, in order to see what pattern of finger-marking builds up, before deciding what to do about it. A third alternative is quite common – to system-build from commercially available kits of parts, which can be dismantled and rebuilt or adjusted at will. This most reticent of alternatives (or cop-outs, as some designers might think) is seemingly in the customers' best interests. However, in practice, the most 'flexible' solutions, theoretically at the free disposal of the user, can come to feel either denuded of life, or psychologically tyrannous (or both); while an apparently rigid and very definite organization of a space can bestow freedom.

It is like living with all one's furniture (and maybe house as well) made out of perforated metal section; there is a continuous subliminal suggestion that you might be missing out on some better permutation of the parts. For qualities of definiteness in environments, it is worth examining some of the hill towns in Italy. The freedom bestowed by a walled town is – like some systems of belief – protectively finite; it is also that of recognition (by territorial boundaries, a most animal requirement). Presupposed, however, is a sense of necessity, of belonging, of history (therefore, of implied

continuity into a future), and of an aggregate slowly cohering into what is finally experienced as an organic whole. It is a mistake to think that vernacular can be turned on at will, as a formal option; or made in any way easily at all, when in fact it is grown; but the study of vernacular form is more than a consolation of philosophy, it is a source of joy to the spirit and the senses. Our own situation is closer to 'seek simplicity and mistrust it'. A brand new office block is no match for such assets, however well designed. In part (but not, alas, in whole) this failing is a function of the papery and repetitious purposes that such buildings must serve – and thus, of a society that deploys its energies so barrenly. There are (incidentally) a few meliorist tactics for the softening of hard architecture, discussed by Robert Sommer in his book *Tight spaces*.

Turning to lighter stuff, there are some forms of display and exhibition design so volatile, colourful, and impermanent, that anything so ponderous as 'analysis' would strike them stone dead. This is the realm of theatre and the market place. An exhibition stand of this kind often succeeds or fails by the 'élan vital' of a single overriding idea, to which everything else is strictly subordinate. The 'idea', however, will still have to be proposed, defended, found feasible, and – worst of all – realized. It is one thing to have a brilliant idea, quite another to make it work. Thus even here, a designer will find that he is not exempt from a good deal of hard thinking and from all the communication and other techniques that forward, prompt, order, and regulate, such thinking. As is well known (or should be), if an argument persuades by its simplicity, usually someone has done their homework: the most economical design may conceal the most arduous preparation. Other and more sober forms of exhibition design (museum display is an example) are normally quite outside the possibility of improvisation, and need a most carefully balanced appraisal of every factor relevant to the design. Exhibitions with a mainly informative content may sometimes go to extreme limits just to avoid being dull, and therefore non-communicative. Such weighting is well within the middle-spectrum range of ordinary design problems. It remains true, however, that exhibition design generally is wide-latitude design; often enough it gets away with little more than a well-acted conviction of purpose.

Graphic designers very often begin with a false brief from their client which will need to be taken right back to its origins before design (in the ordinary sense) can begin. This applies less to bookwork than to the very wide field in which designers are now employed. Exhibition design is an example. The graphic designer may have full responsibility, employing another designer with structural competence as an assistant or collaborator; or the roles may be reversed. Either way a root concept will have to be mutually understood and discussed, and the design may depart far from an initial briefing. Often there is a vagueness of function in exhibition design – the exhibitor may just want to 'be seen to be present' but in a favourable light; but may not put it (or see it) quite in that way. Whatever the requirements turn out to be, it is clear that the specialists involved must understand each other, and to do that they must speak the same language, at least up to the point where technical expertise begins to take over. Such examples point to the dubious logic of educating designers in compartments, and of over-using words like 'two-dimensional'. When was an exhibition ever a two-dimensional experience, or for that matter, catalogues, and other forms of jobbing graphics?

When design decisions are very open and unconstrained – and this might occur in any field of design, not merely in ceramics and textiles where it is usually assumed to occur – it is all the more necessary that the designer has some shared sense of context with other specialists. This need not imply one way or one culture, but does imply a history and a pedigree in any cultural effort. Nobody starts from nowhere; in which case it is better to determine your sources of inspiration, to go after them, and to try to understand what they are about. Otherwise a designer's vision is simply being programmed by 'the surface of the face of things'. It would be silly, for instance, to start designing modern fabrics intended for modern buildings with no understanding whatever of modern architecture. A true understanding involves more than a few images of interiors. It involves what has been attempted in the whole field of object-relations, and the questions, hopes, or assumptions that underpin modern design – that make it intelligible. The textile designer (or other specialist) who conceives the work as self-expression, and works solely with other like-minded specialists, may make

or design some very nice things. In the long run, however, the work will be deprived of connection, of 'due weight' in its context of use, of appropriateness; it will tend to become, in short, self-contained. The opposite was true of some of the very subtle block-stripe curtain materials that used to come from Scandinavia; such material reaches out to its possible context and does not feel 'complete' without it – a property, partly, of directional flow but not peculiar to linear design.

Designing for a missing factor – that of use – is an interesting matter. It is continuously a problem in chair design, where too anatomically receptive a form will seem intrusively empty when nobody is sitting in it – which may mean for most of its life. Its immediate neighbours will be reinforcing the problem. This is one reason why Thonet chairs and stickbacks work so well spatially; they seem to comb space with just a sufficiently forward reminder of their existence. Space flows through them.

A much smaller and formally perfect example is the old Pelikan Graphos pen (as one now has to say, nib-holder) – always a joy to hold and to behold. This pen is a cylinder so pure that aficionados find ample variants in the doming of the ends (the radius of which can provoke discussion), the length of the pocket clip, which unaccountably varies, and the barely-visible placing of the maker's imprint. The clip is itself a 'tour de force' executed without break in the formal language. Here is fine-tolerance decision-making, though coarse by engineering standards, and it is against the severity of the cylinder that the user notes an appropriate weakening of one end, where a screw thread for the cap is turned. Thus only when the pen is used, and the cap duly screwed in place, is the integrity of the cylinder fully asserted. However the geometry is of course weakened at the business end where the nib is now revealed (nibs are individually inserted): the joy, of course, is the transference from formal language to active function, so that what might seem visually weak is suddenly felt as intelligently strong; a case of function compensating form. The fact that the pen works so well (though it is not easy to use, the two are not the same), in that it will produce with precision lines from quarter-inch thick to a hairline in equally precise gradations, provides a functional authority against which all these small points gain in the telling. However, the firm was taken

over, the new version works just as well, employs the same principle, and has been 'restyled'. I say no more.

Here then are considerations of some subtlety whereby one design is found acceptable as against its functionally identical counterpart. In designing the pen in the first place, what 'procedures' or 'methods' would bring a designer towards such a distinction, help him to perceive it, and encourage the perception to become deeply felt? This is one thing to think about; the other is the scale and nature of the distinctions, and the power in them, once perceived.

In the general nature of formal disciplines, it is worth mentioning a common and vulgar heresy rife in some of the colleges, and sometimes supported with more vigour than understanding by Assessors, Course Validators, etc: it is to suppose that every design decision must of its nature demonstrate 'fresh and original thinking', and that the work must be coarse-grained – bear the marks of travail over a wide area of decision-making. This view is partly an unhappy legacy of the competitive spirit that we take for granted in secondary schooling, and which goes on to bedevil higher education in almost all its manifestations. Such thinking has much to do with the serious mismatch between education and 'real life' whenever the gladiatorial degree-taking image is confused with the conditions of design practice. However, these matters are less relevant here than one practical consequence, which is a confusion of gross with fine decision-making. The distinction may in fact be one of gross and subtle judgement.

To illustrate this the Pelikan must be exchanged for a bicycle. As will be seen, the two objects have something in common, at least in the context of this discussion. Consider the situation of a student working on the design of a bicycle. Now this machine is a beautifully tested and developed type-form over a given range of performance conditions; it is known to be a remarkably efficient energy-converter, and it is indubitably the product of a vast amount of co-operative human endeavour to get it to its present stage of refinement. Is there any good reason to redesign the bicycle from first principles? The answer must surely be – probably not, unless you posit quite new conditions of use to which the standard design is ill-adapted. It might be argued that there are such conditions,

such as the effects of parking and fuel problems on commuter traffic. Designers have addressed themselves once again to the folding portable bicycle, which commuters and others might take on public transport. The folding Bickerton with its carrying bag is one light-weight answer; a bit fiddly and doubtless the principle is capable of further development; other and more seemingly radical designs have been published, but not it seems yet marketed. The Bickerton uses conventional spoke wheels and other standard components; it is to that extent a compromise, perhaps, but it works well. There is an inevitable loss of efficiency once the machine is rolling, as compared with a full-size light-weight cycle; this has always been the case with small-wheeled machines and for good reasons. No doubt there will be further work on special purpose bicycles where rolling efficiency can be set against more compelling criteria.

However, the fact remains that within a developed type-form there is still a very great subtlety of possible variants and a considerable range for them. In the case of the bicycle, this applies not only to matters like the design of accessories to develop possible uses in yet unsuspected directions, but also to less obvious matters. The design of the front forks, for example: to get the curve just right, not only by gross functional criteria but also by eye, is no trivial matter. A comparison could be made with cylindrical pots of identical form on which the glaze is progressively varied, or which are very slightly modified in their proportions. Such adjustments are of the essence in realizing a design far beyond the diagram of its intended life (which can be intellectually appraised) and towards its final form; to experience such work can be deeply educative. Considerations of texture, scale, colour, tone, and the radius of an edge; the quality of a curve known so well to a boatbuilder in fairing off a sheer-strake: in getting these things right, or as right as judgement has to concede, the designer employs a concentration, and an artistry, of a different order to that which earlier stages employ – with the aid of logic and rational enquiry. Those stages always seem incredibly far distant.

The designer who does not come to feel naturally for these things (given enough self-training) is as deprived as someone who says 'I don't fancy the physical side of my love-life'. There are many aids to such self-training. No opportunity should be lost for making

comparisons. For instance, students should always look at walls attentively, the plainer the better. Observe the fleeting differences of light and shade, surface, colour, and texture. Imagine one quality of surface replaced by another, and the difference it would make. See how a volume is affected by its planes and their surface qualities. Study brickwork and the effects not only of colour and texture gradations but of different types of pointing. Become aware that within the possibilities of raked pointing there are many distinctions. Confront some of the best small Georgian brick houses; see them first through half-closed eyes just as boxes with perforated holes; then gradually allow the subtlety of detailing, material, and proportion, to establish itself. In typography such matters are taken for granted. Letter forms are finely distinguished and letter-spacing of capitals is still practised, though by no means invariably. In asymmetric typography the possibilities are clearer, because logical distinctions and hierarchies of meaning can be pointed up by very small adjustments of relationship on the page. In raising consciousness of these matters, it should be remembered that our civilization sells itself through sensation, preferably with the volume turned up. This is good reason for designers to learn how to speak quietly, and to understand how it is that conversation becomes possible between people and things. There are good illustrated books to help with such studies. Examples are Gordon Cullen's *Townscape*, Elisabeth Beazley's *Design and detail of the space between buildings*, and Peter Smithson's *Bath: walks within walls*.

Returning to another false definition of design capability, it is surely foolish to suppose that everything in the world must be continuously remade or rebuilt, yet students are made to feel inadequate it they do anything less. Such pretensions must involve quite a waste of human energy and much disappointment, they also demean the possibilities we have, for learning from each other. It is becoming recognized, slowly, that buildings should be readapted to fresh uses wherever possible; the poor have always involuntarily recycled kids' toys and clothing. There are still many appliances that could do with improving, bringing up to date, or simply resuscitating. This has happened recently to some extent with wood-burning and other solid-fuel stoves; in the same area, there are many efficient paraffin devices awaiting rescue. The requirement may

sometimes seem to be that of 'styling', when (say) a given mechanical principle is accepted without serious change. In a sense it is, but not in the way of imposing a style, or a concealment, upon a naked mechanism, as finding the clothes that may suit, and express, its own internal life. If this is a little too anthropomorphic, the fault is here on the right side. This is only one of many possible design activities which (like interior design) are interpretative in their nature, and which could offer a contribution within the spectrum of 'adapt, adjust, make do, mend, and develop': as distinct from 'erase, forget, and innovate'. Much can be learned from this humane preoccupation. As for colleges that stress innovation and 'originality' far too heavily, it is doubtful whether the 'look Ma no hands' content of a degree show will ever lose its appeal (to students, their relatives, and college staff), but perhaps these occasions might be put on a more kindly footing. Before leaving the subject, it might be said – and not too quietly – that the modern movement has always opposed the pettiness and irrelevance of competitive originality, and can well support the propositions in these paragraphs without historical inconsistency; though, if this were not the case, it would also be within the spirit of the modern movement to change its mind.

Two further examples must complete the account of design possibilities begun in this part. A furniture designer is considering the design of a sideboard, and let it be supposed, to simplify matters, that the design brief is very open. If you were the designer, how might you view such an opportunity? To start with you would probably have ideas of your own, but let these be put to one side (not to be lost, but returned to). You will know that the word 'sideboard' means that a certain commonly recognizable piece of furniture has emerged out of history. The origins of the piece are interesting, and perhaps suggestive, but you will question whether these old uses now exist, or exist in that form. Do the furnishing contexts of houses today, and the way people now live, suggest that 'sideboards' still do the same job? You might recall Rietveld's work on this problem, and what it had to say so presciently: 'here is a contingent equation, the elements and components of a sideboard reaching out and dissolving away into new meanings, new relationships with what surrounds them, a question implicit in an answer' (I hasten

to say that this is my own response, not Rietveld's). What will be the surrounding conditions? As has been said about chair design, in practice the brief will close around the limits of the possible: marketing policy, a 'range of furniture', estimated demand, and so forth, are the governing factors in the retail market. User-context does not exist, is unknowable, except indirectly through the operation of supply and demand: furniture is really designed for the shop buyers who make sales policy. It is inevitable that design takes place on a stylistic footing, ringing the changes annually to stimulate the market. The possibilities widen in some of the more specialized or design-conscious shops, and of course dramatically so in the one-off sector – which is where it all happens for design that is formally innovative.

It should be clear that beyond the doodles in a designer's sketchbook there is no such thing as an open brief. There will always be limitations of context if not of contract; and those of cost, materials, and the special conditions of manufacture. The identification of such limits, and the turning of them to constructive account, goes hand in hand with an analysis of use, of performance. In the case of the sideboard, just what is a 'board' and a 'side'? If it is a storage cabinet, what is being stored, why, for whom, for what purposes? Are the contents used regularly – all the contents, or are some virtually dead storage? Should they be there at all? What order and kind of accessibility is implied? Why are the contents screened? – to keep out dust, or to keep out of sight and mind? Is there a temperature or humidity problem? Might there be? What is the 'top' and what is it used for? Is there necessarily a back and a front? In answering these questions and many more, it may be helpful to use a degree of abstraction as a tool of analysis – or perhaps it is better to say, as an analytical resource. For instance, for my own work I devised the categories of surface, container, support, threshold, screen, connector, traverse, grip, and mechanism. By such analytical procedures it is possible to dismantle an object which may have lost its reasons for existence, and to reconstruct it in new terms. The object as such may disappear if its meaning is better seen in some more, selective or more comprehensive arrangement of parts – 'parts' being here, the purposes served. Thus, for instance, wardrobes disappear into storage walls – conceptually, but not on

the retail market, which remains object-fixated although tending to respond to appearances.

For designers the real difficulties do not occur at an analytical level – the determining of relationships – but in the realization of a design, against criteria that become increasingly elusive. This is the realm of the senses, of imagination, and of judgement. The design *may* exhibit an intellectual proposition, or an argument that can be 'read' and for which the key premises may be available to inference. This is unlikely to be more than one dimension of meaning in the job and rarely an essential one – except to the designer, whose satisfaction it may be to write in to the job a clear level of argument as an optional reading, free of any impairment to its more ordinary usefulness. In his analytical work the designer seeks a sense of priority in the work and a full understanding of the conditions that must determine its life. He may seek also a 'diagram of correspondence' to help him – not to dodge his constraints, to get round them, but to take them up, to identify their potential, and to use this potential to positive advantage. As has been said earlier, this conversion of constraint into opportunity is about as good a definition of design as any. The sideboard may well disappear as a recognizable entity and its functions disappear into new relationships. It should be noted, however, how many presuppositions of economic openness have been necessary even to make this discussion possible.

For social and economic reasons design is far from being an open-ended activity; yet, it is an insistent requirement of modern design that openness and intelligibility should characterize its products; that life should be free to flow through them, that their meaning should be defined – indeed, made accessible, by projections of reference that are strictly outside the problem itself. Designers in some fields will have seen an object developing into a system, system into process, and process into information, in a way that disconcertingly suggests that their world is dissolving away around them. In making finite decisions they will be aware of a new dimension of reference in their thinking. This is the simplest consequence of a changing world picture, expressed in the physical sciences, philosophy, the arts, communications technology, and elsewhere. A highly particularized design solution – say a one-off job with clear determinants from place and occasion – must now

not only exhibit a field of generic reference, but derive a gain in particularity from it. Once this design requirement is identified, felt for (it does not have to be an intellectual quest), it will become clear that the survival of modern design, and its character, is inseparable from the interdependence of modern man, the principles of mutuality that knit together his societies, and the altered view he now has of his world, as distinct from that of his village. He does indeed occupy perhaps more consciously a village, but with an altered frame of reference.

Such perceptions have their equivalent in design education. The textile designer who has never felt for the distinctions of outlook implied by (say) Ronchamp, the Barcelona Pavilion, and the Dymaxion house (a specially indigestible mix), or has never distinguished between the geometry of a cube and an inflated structure, is simply working as a badly educated specialist. If on the other hand, such understanding is achieved, there is no loss of focus or immediacy in the designer's own work, but it may well be helped to refer outwards and gain some reinforcement of meaning thereby. The designer's intuitions will be instructed by a richer sense of the place he occupies. There is a parallel with analytical procedure. In forming a hypothesis, the designer will not only have a picture of prior demand to test it against – this is professional necessity – but he will also find that when a hypothesis suddenly springs into consciousness, it is instructed, fitting the conditions of the job rather than arbitrary conditions – and this is creative necessity. When something goes wrong, it can usually be traced back to the beginning, from the acceptance of false premises. Hence on the one hand the importance of questions, and on the other, of the resourcefulness of attitude that prompts them. Such basic requirements (asking the right questions, knowing how to, and mustering the will) are far from being naturally coterminous. This is why technique must be kind to the user and not only 'technically effective'. To use a designer's figure of speech, if the cross-sectional area of personality fails to be exposed to the creative possibilities in a job, so that when necessary the designer can get his weight behind his imagination, then the situation can easily become a sterile one. Technique has a core structure that is irreducible, and possessed by an elementary logic and sequence, but it can be used, and interpreted, with a great deal of personal latitude.

The last example of design opportunities is well discussed by Papanek and others (so it will be only touched upon briefly here), namely, that of inventive design in so many obvious areas of social and personal deprivation, where the look of something and the pleasure of handling or contemplating its qualities are still very relevant, but may have to be strictly secondary to producing it cheaply, getting it marketed, and ensuring that it works for its living. Equipment for the handicapped is a case in point. This work is often close to the engineering end of the design spectrum. Advocates of such work sometimes seem to twist the arm of students into thinking that only preoccupations of this kind are socially responsible. This is a false view, though not unsympathetic. It might be said that two design jobs in the first half of this century have been brilliantly apt, inventive, and economical. One is the design of the cat's-eye for road transport and the other is the design of the London Underground map. In fact the cat's-eye considered merely as an item of manufacture, is a very nice piece of anonymous sculpture, and its self-cleaning rubber eye-lid is a concept masterly in its essential simplicity – but nobody digs up cat's-eyes to admire their form, the important thing is that they work so extraordinarily well. The one job is superbly inventive, the other a first-class ordering of information – a model of its kind. However, it is a mistake to suppose that designers can freely elect to design the equivalents for cat's-eyes, and London Underground maps, or mechanical equipment for handicapped children. The same goes for the trailing link baby-buggy, which must have eased life's burden for so many harassed mothers getting on and off buses with children, or out shopping. An aptitude for mechanical invention is one kind of design skill and it is also a personal design aptitude; not all designers can work in this way, or are naturally drawn to it, whatever view they may take of the moral imperatives that seem to beckon their commitment. Designers must find out just where, within the very wide design spectrum, their own individual contribution can be most effective.

Several conclusions may be drawn – tentatively – from this discussion. The first is that design opportunities are so various and plentiful, and designers so different in their natural capability, that it is rash to generalize too far about the way in which they do (or should) approach their work. Second, it is clear that analytical

thinking may profit from insights that are interdisciplinary; practical design procedures are necessarily so. This is certainly the case up to that familiar and pleasing stage in design work, when the categories of requirement in a job suddenly seem to be matching nicely with the categories of a possible answer. The third conclusion is that this kind of thinking, together with simple problem-solving procedure, is quite natural to design work, but not rigidly or predictably so, over the middle range of the design spectrum (see part 1) – and hardly at all in certain areas. The productive relevance of any design procedure is partly a function of the designer's personality; procedures only exist for people who employ them. Other things being equal, those most acceptable will be closest to the exercise of judgement in ordinary life. If this is so, then it may well be that the ordinary syntactic 'thinking-out-loud' and relatively loose-fit and two-way devices like the report (see part 16) have been somewhat underestimated in favour of logical models of greater sophistication, even though such models have had to be partly dismantled to accommodate objections. In short, it is probably useful to recognize a distinction between technique and method, taking the latter no further than the more lenient notion of 'procedure'.

The natural limitation of such a view is the range of work with which this book is properly concerned. Within this range it is always tempting to confuse logical modes of thinking with the untidy and informal procedures that usually prompt fruitful ideas into being. As is commonly known, the best ideas often occur at odd moments on the backs of old envelopes. Computer-aided analytical technique becomes necessary as the scale of the work increases – and moves off the stage of this book – and as the conditions for its measurable efficiency become both critical and manifold. Where very complex constraints are concerned, as in planning the co-ordination of operations on a large building site, the job cannot be fumbled as far as an analysis of quantities is concerned. For any work with expressive latitude, it is still necessary to define its extent. But in the work discussed here, analytical thinking has the secondary (but crucial) function of presenting the designer to the work in a responsive frame of mind, and in good heart. For some people, reliance on sequential method will paralyse rather than quicken their responses.

The worst error is to take refuge in notions of 'method' or 'process' at the cost of any practical commitment. Thus is a wilderness created by default, and argued for in retrospect by a specious appeal to scientific method in the way the problem was approached. Sir Peter Medawar reminded us that the scientific hypothesis takes the form of a hunch, or an intelligent guess, which is then scrupulously examined against existing schemata to see if it works. Not that such comparisons throw a direct light upon the designer's role, which is to be available to tasks for which his experience is fitting, in full awareness that some things are much better done by people for themselves.

A socially adaptive view of design practice takes the view that a designer accepts what he is given, and makes the best of it, by knowing how to weigh up his constraints shrewdly and logically. This is a perilously inadequate view of adaptation, as can be seen in every area of society where new adaptations to reality are breaking through old and outworn assumptions. Designers must themselves adapt to a changing picture of their professional role and its validity. As was argued on different grounds in part 4, the modern movement advances by fruitful hypothesis, which is often code-breaking. It steps sideways, by an elegant or 'fitting' alternative; and it steps backward by keeping up appearances. Fortunately, falling into disrepute a little, its adherents can relax and accept their common human failings.

Choosing, therefore, a more homely language: a designer must have his tools around him in the ordinary way of competence. A good joiner, who knows (as the saying is) seasoned wood from green, will have in his toolkit a few tools that are rarely used but irreplaceable when needed; he must know how to use them and when to pick them up. A designer's priority is openness of creative response, the capacity to mix the levels of his thinking, to ask productive questions; he must seek the personal conditions that help him to work in that way, and the social conditions that allow him to. This search will not prevent him getting on with the job at the limits of the possible, keeping all his tools sharp for the next chance to make himself useful.

The artist

The artist: disciple, abundant, multiple, restless.
The true artist: capable, practising, skilful;
maintains dialogue with his heart, meets things with his mind.

The true artist: draws out all from his heart,
works with delight, makes things with calm, with sagacity,
works like a true Toltec, composes his objects, works dextrously,
arranges materials, adorns them, makes them adjust, invents.

The carrion artist: works at random, sneers at the people,
makes things opaque, brushes across the surface of the face of things,
works without care, defrauds people, is a thief.

Toltec poem translated from the Spanish by Denise Levertov